DOCUMENT RESUME

ED 285 907 TM 870 513

AUTHOR Adair, John G.; Sharpe, Donald
TITLE Placebo Control Practices in Educational and Psychotherapy Research.
PUB DATE Jul 86
NOTE 20p.; Paper presented at the Annual Meeting of the International Association of Applied Psychology (Jerusalem, Israel, July, 1986).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Control Groups; *Educational Research; Expectation; Literature Reviews; Research Design; *Research Methodology; *Research Problems
IDENTIFIERS *Hawthorne Effect; *Placebo Effect

ABSTRACT

The Hawthorne and placebo effects in educational experiments were examined over a 20-year period, as reported in the ERIC, Dissertation Abstracts International, and Psych Info data bases. The literature searches identified 325 studies in education employing the relevant control procedures, and each study was coded for the type of placebo procedure, its estimated phenomenological impact, the rationale and label for the control group, and whether the procedure's placebo-like qualities were identified/documented. In addition, studies were classified by: (1) educational research topic area; (2) subject age and type; (3) number and nature of treatments; (4) presence and type of no-treatment controls; (5) subject sampling procedures; (6) experimenter characteristics and assignment; and (7) use of blind experimenters or other controls for bias. In most studies, irrelevant or substitute activity was used as the placebo control. In others, the placebo procedure closely resembled treatment, but with no element of treatment administered. In some of these studies, a substantive element of the treatment procedure was included in the placebo procedure. Other studies used minimal contact as the placebo. The rationale, if stated, for use and design of placebo was usually to guard against Hawthorne effects or to compensate for differential concerns, usually attention, activity, novelty, or interaction. The design of placebo groups showed subjects' hypothesis awareness and expectancies were not a major focus of the reviewed research. (MGD)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED285907

# PLACEBO CONTROL PRACTICES IN EDUCATIONAL AND PSYCHOTHERAPY RESEARCH

John G. Adair and Donald Sharpe

University of Manitoba
Winnipeg, Canada

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. G. Adair

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Paper presented at the International Association of Applied Psychology meetings, Jerusalem, Israel, July, 1986. As this is an interim report, please do not cite without checking with the authors.

TM 870513

BEST COPY AVAILABLE

# PLACEBO CONTROL PRACTICES IN EDUCATIONAL AND PSYCHOTHERAPY RESEARCH

The placebo effect and placebo controls are concepts borrowed from psychopharmacology. These concepts were borrowed because researchers recognized that reactive effects of human subjects arising in the conduct of drug research were also encountered in experimental research in the behavioral sciences. In the drug context a placebo is defined as an inert substance with no known pharmacological effect. Its meaning, when applied, for example, to tests of the outcome effectiveness of therapy or to classroom tests of new curricula or teaching methods, is less clear.

The use of placebos in psychotherapy research has in recent years become the subject of intense debate (Critelli & Neumann, 1984; Eysenck, 1985; Henry, 1985; Kirsch, 1985; Parloff, 1986). Meta-analytic assessments of outcome effectiveness (Smith, Glass & Miller, 1980; Landman & Dawes, 1983; Shapiro & Shapiro, 1983) have intensified the concern. Much of the debate has focussed on what the concept means, and on whether and how it should be operationalized. Scientific opinion ranges from those who wish to strike the construct from our vocabulary (Henry, 1985), or eliminate the use of placebo controls (O'Leary & Borkovec, 1978; Wilkins, 1984), to those who argue that it should merely be renamed (Kirsch, 1985), or that it is comprised of common factors

and therefore essential for assessing the incremental effectiveness of specific forms of psychotherapy (Critelli & Neumann, 1984).

Unfortunately, the debate has been based almost entirely on argumentation and appeal to logic (some of it faulty), and more motivated by a dissatisfaction with the outcomes of meta analyses. Concerns have focused almost exclusively on the placebo concept vis a viz psychotherapy, specifically outcome effectiveness research. The fact that there was a human subject reactivity problem to which the placebo control was initially directed to solve, seems at times to have been all but forgotten. Rather than pursue its conceptual basis from this narrow perspective and to avoid the controversy inherent in the psychotherapy outcome effectiveness-placebo debate, an examination of empirical evidence of placebo control practices and their effectiveness in addressing the reactivity problem in a related research area would seem warranted.

The comparability of research in education to that in psychology, especially assessments of the outcome effectiveness of educational treatments through the application of placebo controls in field and laboratory experimentation, suggests that research on placebo control practices in this related field might be informative to both disciplines. In education, placebo controls have been extensively used, with less controversy and less posturing over their appropriateness, but with no greater clarity of interpretation. Methodological concern has been directed more toward the Hawthorne effect in educational

experiments (Cook, 1967), than to the placebo effect. Yet, influential discussions of threats to validity (Bracht & Glass, 1968) and many research methods texts, by combining their discussion of the two effects, have blurred this distinction. Practical applications and labeling of control procedures in education experiments, have contributed to the confusion, rendering their distinction difficult, if not impossible, to make. To avoid further confusion, within this review Hawthorne and placebo effects are not differentiated. The placebo label is exclusively used when referring to the control procedures of concern.

This review adopts a strategy not unfamiliar to methods in the philosophy of science. Some philosophers of science articulate a theory of how research should unfold by historical analysis of previous research developments; others employ logic. In deciding upon methodological strategies it seems valuable to review past practices with regard to control procedures, to determine their effectiveness, and to articulate appropriate research strategies based upon these empirical data. The present paper summarizes the early stages of a review of the use of placebo controls in education over the previous two decades.

## Method

Through a series of computerized literature searches of the Educational Resources Information Center (ERIC), Dissertation Abstracts International, and Psych Info data bases, 325 studies in education employing the relevant control procedures were

identified. Any study employing control groups that were labeled Hawthorne, placebo, or attention-placebo, or a group that was similar in appearance and intent to these controls, was included. In addition to searches for the relevant labels, general, full-text searches of studies identified as including "experimental or control groups" yielded the remaining studies. Although no systematic biases were knowingly pursued, it should be recognized that some chance factors operate in such a search process, and that large numbers of relevant studies may have been overlooked. As this is also an interim report, i. e., additional studies continue to be pursued in order to obtain as large a sample as possible, conclusions drawn from the current data may have to be regarded as tentative. However, in view of the sample size and broad search strategy, the current data base is probably a representative sampling of research in education employing this methodology.

Each study within the data base was identified by author and by publication date and form (journal, ERIC document, or dissertation), and then coded on each of 14 separate categories. The codings were completed by the second author, usually from quite objective data, although some of the codings required subjective assessments or ratings. Informal reliability checks were obtained by reratings of a sample of 10 studies by the first author. Whereas overall agreement was quite high, in the range of .90, more formal reliability indices are being obtained separately for each coding item from a much larger sample of studies.

Each study was coded for the type of placebo procedure, its estimated phenomenological impact, the rationale and label for this control group, and whether the placebo-like qualities of the procedure were identified or documented. In addition, each study was classified according to the topic area (academic subjects, school or classroom behavior, mental retardation, physical education, reading, concept training, learning disability, teaching methods and teacher performance-related factors, or other educational), subject age and type, number and nature of the treatments, presence and type of no-treatment controls, subject sampling procedures, experimenter characteristics and assignment, and whether or not blind experimenters or other controls for bias were employed. Of these codings, only those variables found to be of some significance are discussed in this report. Nonetheless, the classification of the data yielded a substantial amount of descriptive information about the intent and use of placebo control procedures. Analysis of their effectiveness and impact on dependent variables will be analyzed in Phase II of the project.

## Results

Use. The majority of researchers employed what might be called an irrelevant or substitute activity (N=168) for their placebo control. The intention of such a procedure was to constitute a control group that would be equivalent in level of attention, interaction, or activity to the experimental group. The placebo activity, in such cases, bore no relationship to the treatment in form or substance. In a substantial number of

studies (N=103) the placebo procedure was designed to closely resemble the form of the treatment, though no real element of the treatment was administered. These procedures closely resembled the treatment in medium of stimulus presentation, form of activity, or general nature of stimulus materials. A smaller subset of studies (N=36) were found to have included within the placebo procedure some substantive element (though not all) of the treatment procedure. Through this procedure investigators could determine whether the full treatment had a significantly greater effect on their subjects. A few studies, although labeled placebo or Hawthorne control groups, actually employed only minimal contact (N=16) as the form of a placebo procedure. Presumably the ongoing activities of subjects in these groups constituted what the investigator regarded as a placebo against which treatment results could be compared.

In the majority of studies placebo control groups constituted the sole control procedure (N=204; 62.8%). One might infer that in these cases the "placebo" group serves the purpose of both a no-treatment and placebo control. This makes it difficult to identify whether placebo effects were operative or to assess the size of the effect generated by the placebo procedures. No treatment controls were proportionally more commonly employed in studies where the placebo consisted of a treatment element (N=14; 39% of these studies) or merely resembled the form of the treatment (N=46; 44%), than where it was a substitute activity (N=58; 34%).

Purpose. The expressed intention of the placebo control

process, among those stating a purpose, was wideranging. Overall, the most commonly stated rationale was to guard against "the expected Hawthorne effect". This is not very informative since it has been shown (Adair, 1984) that there is considerable confusion and disagreement over what constitutes the Hawthorne effect. The other reasons given for placebo controls indicates the range of methodological concerns they are designed to address. Specifically the placebo control was reported to be introduced to correct or compensate for differential attention, activity, novelty, interaction, motivation, expectancy, awareness, and a few other factors that defy classification. When researchers employed substitute activities as the placebo, attention and activity were the most common rationales given; when they employed treatment elements, controls were generally provided for novelty and interaction.

Rationales for the placebo control were provided about equally often when the placebo procedure was a treatment element (N=10), a resemblance to the form of the treatment (N=38), or a substitute activity (N=51). In other words, about one-third of the studies in each placebo procedure category reported a rationale for their use of the procedure.

The foregoing data imply much greater rationalization of the placebo control process than exists in the literature. The vast majority of studies (N=220, 67.7%), whether employing an activity labeled as a placebo or Hawthorne control, stated no rationale for the inclusion of the control procedure. This might imply such widespread understanding of the control procedures and their

purposes, that explanation or justification of their use is no longer required. Rather, when viewed in light of these data, it suggests that educational researchers have varied conceptions of a control process that is being used for a number of different purposes.

Phenomenological impact of placebo activity. As each study was being rated for various control practices, two subjective ratings were undertaken of the likely phenomenological impact of the control activities on subjects. The first was a judgement, based on the description of the procedure, of whether the placebo treatment led to increased attention, a performance expectancy or hypothesis, a novel experience, or some combined impact. Overall, the placebo procedure appeared to have a mere special attention impact on subjects in the overwhelming majority of studies (N = 266). Performance expectancies were created in only about one-third of the studies (N=107). Novelty was seldom the phenomenological experience generated by these procedures (N=30). Because many studies simultaneously led to several phenomenological experiences (N=56; 17.2%), these data exceed the total number of studies. The fact that only a small number of these studies had an exclusively performance expectancy impact (N = 55) is of considerable interest in evaluating the placebo control process. In an earlier paper Adair (1984) inferred that subjects' hypothesis awareness or performance expectancy was the artifact source that required special controls. From the present data it appears that this concern receives relatively little attention.

The second subjective coding was a rating of whether subjects were aware they were in a treatment program or experiment. Because the information to enable this judgement was limited in research reports, awareness was difficult to assess definitively. However, awareness (N=90) or unawareness (N=52) was clearly established in a number of studies and led to the following observations. Awareness of participation was found to be significantly more common, and unawareness less common, when the placebo procedure was some treatment element (14 aware, 4 unaware) or resembled the form of the treatment (38 aware, 11 unaware), than when it is was a substitute activity (34 and 35, respectively).

Within those studies that had a performance expectancy impact on subjects, the greater awareness-lesser unawareness ratio was maintained regardless of the type of placebo procedure. When the phenomenological impact was merely attentional, however, the proportion of subjects who were aware or unaware of their participation in an experiment varied as a function of whether the placebo procedure was a treatment element (7 aware, 4 unaware), treatment resemblance (24 aware, 9 unaware), or substitute activity (20 aware, 31 unaware). Awareness was less and unawareness greater with the substitute activity.

Placebo procedures within different topic areas. Each study was classified into one of eight research topic areas: academic curricula (N= 20); learning disability (N = 24); physical education (N= 4); school or classroom behavior problems (N= 55); reading (N= 60); concept training (not associated with a

particular course) (N= 84); mental retardation (N= 27); teaching methods and teacher performance-related factors (N=12); and other educational (N= 38). Within these categories, the data were examined to see if there were any distinctive trends or patterns among the placebo procedures used, their phenomenological impact, design differences, and so on. These data are presented in Table 1.

---

Insert Table 1 about here

---

The distinctive topic category appeared to be the research into treatment of school and classroom behavior problems. Although it may be that this distinctiveness should be regarded as primarily due to the similarity of research in this area to studies in psychotherapy, this area has its own characteristics that might account for some of the observed differences. A substantially higher percentage of the studies in this topic area (44%), compared to most other areas, were published in journals, rather than merely listed as ERIC documents (the exception being learning disability at 50%). Moreover, in contrast to much psychological experimentation, most studies within this area, and within each category of educational research, involved group rather than individual administration of the experimental treatments.

Regardless of the reasons, the observed differences were substantial. Classroom behavior problem research was the only topic area to employ no treatment controls in the majority of

studies (34 of 56). The majority of studies in this area specifically labelled their special control procedures as placebo, attention-placebo, or Hawthorne controls (N= 18, 9, and 4, respectively). Learning disability studies were the only other topic area to do so frequently (N= 9, 1, & 5).

Research in the classroom behavior area also employed blind controls or other special procedures to address sources of artifact substantially more often than any other area and it was virtually the only area to provide documentation of the placebo-like qualities of their procedures (N=7). Phenomenologically, subjects within classroom behavior research (aware= 27, unaware= 2) were more apt to know that they were in an experiment or treatment program. Only other educational research (19 and 6, respectively), showed a comparable level of awareness of experiment participation.

Aside from problem classroom behavior research, there were few distinctive trends. The only areas to employ treatment element and treatment resemblance placebo procedures as often or more commonly than substitute activity procedures were teaching methods (N=4, 6, & 2, respectively) and other educational (N=10, 9, & 19). A somewhat similar pattern was found in reading research (N=6, 22, & 29). In all research areas special attention, rather than performance expectancy, was the area of phenomenological impact.

## Discussion

From the foregoing quantitative summary of practices

surrounding the use of placebo control groups in educational research, it is apparent that considerable confusion surrounds their use. Because there is virtually no guidance from research methods textbooks (Borg and Gall,1979, might be regarded an exception) or from prior research conclusions (at least these were hardly ever cited) on how a placebo group should be designed and what subjects should do, there was a fair degree of variability among the practices followed in the studies reviewed.

The purposes for which the control group is introduced are varied and address several quite different methodological problems. Control for the Hawthorne effect is the most commonly stated reason, and prior research has shown that there is confusion over the meaning of that artifact (Adair, 1984). On the one hand the placebo control group appears to be used as a panacea for all sorts of methodological problems. On the other hand, and more frequently, it is employed as a precautionary control without regard to specific methodological objectives. It is invoked not as a result of some design-based decision, but because it seems necessary or "the proper thing to do".

Subjects' hypothesis awareness and expectancies, as the first author's analysis of the Hawthorne effect indicated, are more significant contributors to artifact than mere awareness of being in an experiment, or special attention or contact with an experimenter. Yet, this review indicates that it is the latter that is the focus of the placebo control process in most research. Subjects' expectancies were a relatively minor concern

among the studies reviewed, and hypothesis awareness, or formation of a hypothesis by subjects, was never mentioned.

The problem is that the placebo concept and control procedures have been borrowed from pharmacology without a great deal of thought to their application in behavioral science. Behavioral researchers are cognizant of the reactivity problem in human research, and the placebo control superficially appears to be an appropriate response to that concern. However, the concept has not been subjected to meaningful analysis and no empirical research has been undertaken to guide its implementation. There has been no empirical study of what consititutes a proper placebo control procedure, what procedures are most effective to achieve the control needed, and so on.

Most thinking about placebo control procedures has been based on what logically or intuitively seemed appropriate. Yet, a wealth of data exists through the prior application of this technique. An empirical analysis of the purposes to which the placebo has been applied, of the effect size obtained with each procedure, and of what has been effective to date, should yield useful data to inform the decision making process over the procedures that are best suited to address our methodological concerns. It is to this added empirical analysis, specifically a meta analysis of placebo control procedures (in those studies employing both placebo and no-treatment controls), that this project is next directed.

## References

Adair, J. G. (1984). The Hawthorne effect: A reconsideration of

the methodological artifact. Journal of Applied Psychology, 69, 334-345.

Borg, W. R., & Gall, M. D. (1979). Educational research: An introduction (3rd. ed.). New York: Longman.

Bracht, G. H., & Glass, Gene V. (1968). The external validity of experiments. American Educational Research Journal, 5, 437-474.

Cook, D. (1967). The impact of the Hawthorne effect in experimental designs in educational research. (Report No. 0726). Washington, DC: US Office of Education.

Critelli, J. W., & Neumann, K. F. (1984). The placebo: Conceptual analysis of a concept in transition. American Psychologist, 39, 32-39.

Eysenck, H. J. (1978). Psychotherapy effects: Real or imaginary? American Psychologist, 4033, 239-240.

Henry, W. P. (1985). The time-released placebo: A reply to Critelli and Neumann. American Psychologist, 40, 239.

Kirsch, I. (1985). The logical consequences of the common-factor definition of the term placebo. American Psychologist, 40, 237-238.

Landman, J. T., & Dawes, R. M. (1983). Psychotherapy outcome: Smith and Glass' conclusions stand up under scrutiny. American Psychologist, 37, 504-516.

O'Leary, K.D., & Borkovec, T. D. (1978). Conceptual, methodological, and ethical problems of placebo groups in psychotherapy research. American Psychologist, 33, 821-830.

Parloff, M. B. (1986). Placebo controls in psychotherapy

research: A sine qua non or a placebo for research problems? Journal of Consulting and Clinical Psychology, 54, 79-87.

Shapiro, D. A., & Shapiro, D. (1983). Comparative therapy outcome research: Methodological implications of meat-analysis. Journal of Consulting and Clinical Psychology, 51, 42-53.

Smith, M.L., Glass, G., & Miller, T. I. (1980). The Benefits of Psychotherapy. London: Johns Hopkins University Press.

Wilkins, W. (1984). Psychotherapy: The powerful placebo. Journal of Consulting and Clinical Psychology, 52, 570-573.

research: A sine qua non or a placebo for research problems? Journal of Consulting and Clinical Psychology, 54, 79-87.

Shapiro, D. A., & Shapiro, D. (1983). Comparative therapy outcome research: Methodological implications of meat-analysis. Journal of Consulting and Clinical Psychology, 51, 42-53.

Smith, M.L., Glass, G., & Miller, T. I. (1980). The Benefits of Psychotherapy. London: Johns Hopkins University Press.

Wilkins, W. (1984). Psychotherapy: The powerful placebo. Journal of Consulting and Clinical Psychology, 52, 570-573.

Table 1

Percentage of Placebo Control Practices and Effects Across Educational Research Topic Areas

| Topic Area | Group Admin | No Tmt Cntrl | Artfct Cntrl | Doc | Placebo Label | | | Placebo Procedure | | | Phenomenological Impact | | | Awareness | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | A-P | H | P | Sub | Tmt R | Tmt E | Attn | Expct | Novel | Aware | Not |
| Academic Curricula | 95.0 | 25.0 | - | 12.5 | - | - | 30.0 | 45.0 | 35.0 | 05.0 | 70.0 | 30.0 | - | 11.8 | 17.6 |
| School Behavior | 64.2 | 60.7 | 30.0 | 16.7 | 16.1 | 07.3 | 32.1 | 53.6 | 37.5 | 05.3 | 67.8 | 39.3 | 12.5 | 50.9 | 03.8 |
| Concept Training | 69.0 | 28.6 | 15.3 | - | 01.2 | 10.7 | 28.6 | 48.9 | 32.1 | 11.9 | 85.7 | 25.0 | 20.2 | 19.7 | 21.0 |
| Learning Disabilities | 66.6 | 45.8 | 27.8 | 11.1 | 04.2 | 20.8 | 37.5 | 66.7 | 16.7 | 04.2 | 79.2 | 25.0 | 12.5 | 22.7 | 27.3 |
| Mental Retardation | 62.9 | 29.6 | 20.0 | 07.7 | 03.7 | 11.1 | 18.5 | 74.1 | 18.5 | 03.7 | 92.6 | 07.4 | 03.7 | 03.8 | 23.1 |
| Other Educational | 65.7 | 31.6 | 06.9 | - | 10.5 | 05.2 | 26.3 | 50.0 | 23.7 | 26.3 | 86.8 | 31.6 | 05.2 | 52.8 | 16.7 |
| Reading | 88.3 | 35.0 | 13.0 | 03.7 | - | - | 16.7 | 48.3 | 36.7 | 10.0 | 80.0 | 38.3 | - | 18.9 | 22.6 |
| Teaching Methods | 83.3 | 33.3 | 37.5 | 12.5 | 08.3 | - | 33.3 | 16.7 | 50.0 | 33.3 | 66.7 | 41.7 | - | 70.0 | 10.0 |

Note: Doc = Documentation; A-P = Attention Placebo; H = Hawthorne; P = Placebo; Sub = Substitute Activity; Tmt R = Treatment Resemblance; Tmt E = Treatment Element